What Is Claimed Is:

1. A communication network system having a central management device and a plurality of local area network systems, said central management device and said plurality of local area network systems being connected to each other, each of the plurality of local area network systems having a router and a terminal which are connected to each other via a local area network,

said central management device comprising:

a management database for storing at least one common key, each public key assigned to each router and a public key assigned to the central management device; and

a central-side encryption unit for encrypting the common key by using each public key assigned to each router, and sending the encrypted common key to each router;

said router comprising:

a first router-side decryption unit for decrypting the encrypted common key sent from said center-side encryption unit by using a secret key of the router;

a storage unit for storing the common key after decryption by said first router-side decryption unit; and

a router-side encryption unit for encrypting communication data to be sent from a first source terminal in a local area network system of the router to a first destination terminal in another local area network system, or communication data to be sent from the router to the central management device,

by using the common key stored in said storage unit, and sending the encrypted communication data to another local area network or the central management device.

2. The communication network system according to claim 1, wherein

said central-side encryption unit encrypts the public keys and sends said encrypted public keys to each router,

said first router-side decryption unit decrypts the encrypted public keys sent from the central-side encryption unit by using the secret key of the router,

said storage unit stores the public keys after decryption by said first router-side decryption unit, and

said router-side encryption unit selects the public key for a router of another local area network system or the central management device to be a destination from the public keys stored in the storage unit, encrypts the common key by using the selected public key, and sends the encrypted common key to another local area network or the central management device, together with the encrypted communication data.

3. The communication network system according to claim 1, wherein

said management database further stores secret concealment terminal data indicating a combination of one terminal in one of the plurality of local area network systems and another terminal in another of the plurality of local area

network systems, data communicated between one and another terminals of said combination being required to be encrypted;

said central-side encryption unit encrypts the secret concealment terminal data by using each public key assigned to each router, and sends the encrypted secret concealment terminal data to each router,

said first router-side decryption unit decrypts the encrypted secret concealment terminal data sent by the central-side encryption unit by using the secret key of the router,

said storage unit stores the secret concealment terminal data after decryption, and

said router-side encryption unit encrypts the communication data if the combination of the first source terminal and the first destination terminal is contained in the secret concealment terminal data.

4. The communication network system according to claim 1, wherein said router further comprises:

a second router-side decryption unit for decrypting data sent from a second source terminal in another local area network system to a second destination terminal in the local area network system of the router, and sending the data after decryption to said second destination terminal.

5. The communication network system according to claim 4, wherein

said management database further stores secret concealment terminal data indicating a combination of one terminal in one of the plurality of local area network systems and another terminal in another of the plurality of local area network systems, data communicated between one and another terminals of said combination being required to be encrypted,

said central-side encryption unit encrypts said secret concealment terminal data by using each public key assigned to each router, and sends the encrypted secret concealment terminal data to each router,

said first router-side decryption unit decrypts the encrypted secret concealment terminal data sent by the central side encryption unit, by using the secret key of the router,

said storage unit stores the secret concealment terminal data after decryption, and

said second router-side decryption unit decrypts the communication data if the combination of the second source terminal and the second destination terminal is contained in the secret concealment terminal data.

6. The communication network system according to claim 1, wherein

if the common key stored in the management database is updated, said central-side encryption unit encrypts the updated common key and sends the updated and encrypted common key, and said first router-side decryption unit decrypts the updated and encrypted common key, and said storage unit substitutes the

already stored common key by the updated common key after decryption, for storage.

7. The communication network system according to claim 2, wherein

if the public key stored in the management database is updated, said central-side encryption unit encrypts the updated public key and sends the updated and encrypted public key, and said first router-side decryption unit decrypts the updated and encrypted public key, and said storage unit substitutes the already stored public key by the updated public key after decryption, for storage.

8. The communication network system according to claim 3, wherein

if said secret concealment terminal data stored in the management database is updated, said central-side encryption unit encrypts the updated secret concealment terminal data and sends the updated and encrypted secret concealment terminal data, and said first router-side decryption unit decrypts the updated and encrypted secret concealment terminal data, and said storage unit substitutes the already stored secret concealment terminal data by the updated secret concealment terminal data after decryption, for storage.

9. The communication network system according to claim 5, wherein

if said secret concealment terminal data stored in the management database is updated, said central-side encryption unit encrypts the updated secret concealment terminal data and sends the updated and encrypted secret concealment terminal data, and said first router-side decryption unit decrypts the updated and encrypted secret concealment terminal data, and said storage unit substitutes the already stored secret concealment terminal data by the updated secret concealment terminal data after dec4yption, for storage.

10. A communication method in a communication network system having a central management device and a plurality of local area network systems, said central management device and said plurality of local area network systems being connected to each other, each of the plurality of local area network systems having a router and a terminal which are connected to each other via a local area network, comprising steps of:

in said central management device,

encrypting at least one common key stored in a management database in advance by using each public key assigned to each router, each public key being stored in said management database in advance; and

sending the encrypted common key to each router; and

in said router,

decrypting the encrypted common key sent from the central management device by using a secret key of the router;

encrypting communication data to be sent from a source terminal in a local area network system of the router to a destination terminal in another local area network system, or communication data to be sent from the router to the central management device by using the common key; and

sending the encrypted communication data to another local area network or the central management device.

11. A router disposed in each of a plurality of local area network systems which are connected to a central management device, the router being connected via a local area network to a terminal disposed in each of the plurality of local area network systems, the router comprising:

a decryption unit for decrypting an encrypted common key sent from said central management device, by using a secret key for said router, said common key being encrypted by using a public key for the router;

a storage unit for storing said common key after decryption by said decryption unit; and

an encryption unit for encrypting communication data to be sent from a source terminal in a local area network system of said router to a destination terminal in another local area network system, or communication data to be sent from said router to the central management device, by using the common key stored in said storage unit, and sending the encrypted communication data to another local area network or the central management device.

12. A communication method of a router in each of a plurality of local area network systems which are connected to a central management device, said router being connected to a terminal via a local area network, comprising steps of:

decrypting an encrypted common key sent from said central management device by using a secret key for said router, said common key being encrypted by using a public key for said router;

storing the common key after decryption in a storage unit in the router;

encrypting communication data to be sent from a source terminal in a local area network system of the router to a destination terminal in another local area network system, or communication data to be sent from the router to the central management device, by using the common key stored in the storage unit; and

sending the encrypted communication data to another local area network or to the central management device.

13. A program product executed by a router disposed in each of a plurality of local area network systems which are connected to a central management device, the router being connected via a local area network to a terminal disposed in each of the plurality of local area network systems, said program product comprising steps of:

decrypting an encrypted common key sent from the central management device by using a secret key of the router, said

common key being encrypted by using a public key of the router;

storing said common key after decryption in a storage unit of the router;

encrypting communication data to be sent from a source terminal in a local area network system of the router to a destination terminal in another local area network system, or communication data to be sent from the router to the central management device, by using the common key stored in the storage unit; and

sending the encrypted communication data to another local area network or to the central management device.

14. A central management device connected to a plurality of local area network systems each having a router and a terminal which are connected to each other through a local area network, the central management device comprising:

a management database for storing at least one common key, each public key assigned to each router and a public key assigned to said central management device, said at least one common key being used by each router to encrypt communication data to be communicated between a terminal of a local area network system and a terminal of another local area network system, or between each router and the central management device; and

an encryption unit for encrypting the common key by using each public key assigned to each router, and sending the encrypted common key to each router.

15. A management method of a central management device connected to a plurality of local area network systems each having a router and a terminal which are connected to each other through a local area network, the management method comprising steps of:

storing in a management database and managing at least one common key, each public key assigned to each router and a public key assigned to said central management device, said at least one common key being used by each router to encrypt communication data to be communicated between a terminal in a local area network system and a terminal in another local area network system, or between a router and the central management device;

encrypting the common key by using each public key assigned to each router; and

sending the encrypted common key to each router.

16. A program product executed by a computer installed in a central management device connected to a plurality of local area network system each having a router and a terminal which are connected to each other through a local area network, said program product comprising steps of:

storing in a management database and managing at least one common key, each public key assigned to each router and a public key assigned to said central management device, said at least one common key being used by each router to encrypt communication data to be communicated between a terminal in a

local area network system and a terminal in another local area network system, or between a router and the central management device;

encrypting the common key by using each public key assigned to each router; and

sending the encrypted common key to each router.